

IN THE ABSTRACT

Please approve the Abstract as attached hereto.

IN THE SPECIFICATION

Cancel Paragraphs 6, 7 and 8 on page 18.

Please amend the following Paragraphs. Clean versions of these paragraphs are shown below while marked-up copies are attached hereto.

1st and 2nd Paragraphs on page 19:

Q1
-- Figs. 6(a) to 6(c) are each a view showing an elastic/brush roller cleaning system.

Figs. 7(a) to 7(f) are each a view of a structure in which each cleaning member is paired. --

Bridging pages 23 and 24:

Q2
--Said image forming apparatus comprises drum-shaped photoreceptor 10 which is rotationally driven, charging unit 11 which uniformly charges the surface of said photoreceptor 10, exposure unit 12 which exposes the surface of said photoreceptor 10 charged by said charging unit 11, development unit 13 which visualizes the electrostatic latent image formed by said exposure unit 12 employing a developer comprising a toner, a transfer unit 14 which transfers the toner image formed on photoreceptor 10 in the transfer zone onto a recording material, separation unit 15 which separates said recording material which comes into close contact with photoreceptor 10, and cleaning unit 20 which removes the toner 1 on photoreceptor 10 which passes through the transfer zone. --

1st Paragraph, page 26:

Q3 In Fig. 1(a), numeral 24 is a scraper provided on cleaning roller 21, which recovers toner on cleaning roller 21. The recovered toner is conveyed to development unit 13 employing recovery roller 25 which is arranged to maintain parallel to cleaning roller. The recovered residual toner is conveyed to development unit 13, employing the recovery roller 25 and reused.

2nd Paragraph on page 31:

Q4 Further, other than said scraper, it is possible to employ rollers as well as brushes as the removal means. Toner recovered by scraper 24 is charged into development unit 13 together with toner recovered by cleaning blade 23, employing recycling means and reused. A plurality of removal means such as scraper may be provided. When cleaning ability of cleaning roller is enhanced, recovery is preferably carried out employing a plurality of scrapers, since the toner adheres tightly to cleaning roller 21 under an electrostatic force.

1st and 2nd Paragraphs, page 41:

Q5 On the other hand, a bias voltage in response to the volume of the electric current controlled by control unit 28 is applied to cleaning roller 21 constituting cleaning unit 20, employing a bias voltage applying means, and said cleaning roller 21 is charged to the opposite polarity (for example, positive polarity) of the residual toner on photoreceptor 10 which has passed through the transfer zone, whereby most residual toner on photoreceptor 10 is removed. After the residual toner passing through cleaning roller 21 is mechanically removed by cleaning blade 23, photoreceptor 10 is recharged by charging unit 11, and said operation is repeated.

Further, recovered residual toner is conveyed to development unit 13, employing recovery roller 25 and reused.

Q6 2nd Paragraph, page 43:

As shown in Fig. 5, in the image forming apparatus of the present invention, it is preferable that cleaning roller 21 constituting cleaning unit 20 is comprised of conductive portion 31 and insulated portion 32 which are located beyond both ends of said conductive portion 31 in the lateral direction.

Q1 Specifically, in said cleaning roller 21, the portion corresponding to effective charging area W3 of charging unit 11, is comprised of a conductive or semi-conductive material, and at the same time, a part beyond the part corresponding to effective charging area W3 is comprised of insulating materials. Further, in order to minimize discharge from conductive portion 31, cleaning roller constituting materials, each of which has different surface resistance, is joined via, for example, insulating buffer member 33.

The surface resistance of insulated portion 32 is preferably at least $10^{11} \Omega\text{cm}$, and is more preferably at least $10^{13} \Omega\text{cm}$. By adjusting the surface resistance to the preferred range, it is possible to assuredly minimize discharge due to the electric current applied by cleaning roller 21 as well as charge accumulation on photoreceptor 10.

Said surface resistance is obtained based on V/IW , wherein V is the constant voltage applied to cleaning roller 21 when said cleaning roller is provided on a flat conductive board, I is the electric current running from said flat board, and W is the contact width of said flat board and cleaning roller 21.

Q8 [✓] 3rd Paragraph, page 45:

Further, since insulated portion 32 is formed on cleaning roller 21, it is possible to minimize occurrence in which toner, which has been recovered, is scattered on the sides of photoreceptor 10 and adheres onto said photoreceptor 10.

Q9 [✓] 1st Paragraph, page 46:

As noted above, in the image forming method of the present invention, in addition to mechanical cleaning by cleaning blade 23, electrostatic cleaning by cleaning roller 21 is conducted. As a result, without an increase in contact load of cleaning blade to photoreceptor 10, it is possible to obtain higher cleaning performance without fluctuations over an extended period of time. Therefore, marked effects are exhibited by employing organic photoreceptors which have not been employed in the conventional cleaning units, due to the fact that it was impossible to increase contact load of cleaning blade 23 and to still obtain stabilized cleaning performance over an extended period of time.

1st Paragraph, page 54:

Q10 As noted in the image forming method of the present invention, in addition to mechanical cleaning obtained by employing cleaning blade 23, electrostatic cleaning obtained by employing cleaning roller 21 is practiced. As a result, without an increase in contact load of cleaning blade on photoreceptor 10, it is possible to exhibit stable and high cleaning performance over an extended period of time. Therefore, marked effects are exhibited by employing organic photoreceptors which have not been employed using the conventional cleaning unit, due to the fact that it is impossible to increase contact load of cleaning blade 23 and to obtain stable cleaning performance over an extended period of time.

1st Paragraph, page 59:

Q11 Figs. 7(a) to 7(f) each is a view of a structure in which each cleaning member is paired.

2nd Paragraph, page 64:

Q12 Said system is constituted in such a manner that elastic roller and brush roller 29 come into contact with the photoreceptor and the toner on said photoreceptor is mechanically removed.

Table 4-2, page 176

Table 4-2

	First Cleaning Member	Second Cleaning Member	Toner	Insufficient Cleaning	Image White Streaks	Image Black Streaks	Remarks
Example 4-1	A(55%)	E(90%)	1	good to the 200,000th copy	none	none	
Example 4-2	C(95%)	E(90%)	1	good to the 200,000th copy	none	none	
Example 4-3	E(90%)	D(30%)	1	good to the 200,000th copy	none	none	
Example 4-4	B(75%)	A(55%)	1	good to the 200,000th copy	none	none	
Comparative Example 4-1	D(30%)	C(95%)	1	occurred at about the 120,000th copy	occurred at about the 140,000th copy	occurred at about the 120,000th copy	
Comparative Example 4-2	F(40%)	E(90%)	1	occurred at about the 140,000th copy	occurred at about the 150,000th copy	occurred at about the 140,000th copy	
Example 4-5	C(95%)	E(90%)	2	good to the 200,000th copy	slightly occurred at about the 150,000th copy	none	interior apparatus staining due to scattering, generation of white streaks due to stained charging pole

Figures in parentheses are the toner removal ratio.

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